

Case Study by BCR group member Steve Whiteley.

Hybrid cars

Lower emissions, better economy

Hybrid cars are intended to reduce exhaust emissions whilst maintaining a performance that has become accepted as normal. They achieve this by combining a small petrol engine with battery powered electric motors. The small petrol engine gives low emission power for cruising and the electric motor gives the additional power for acceleration and hill climbing whilst adding no extra exhaust emissions. The battery is charged by absorbing the energy usually lost in heat during braking and during overrun as the car free wheels downhill or when you lift the accelerator pedal approaching hazards. The same rotating electric device works as a motor when electric power is fed to it and generates power for battery charging when absorbing power from the car wheels on overrun. This is controlled by on board computers.

Different manufacturers have adopted slightly different strategies for the more detailed aspects of energy economy. Honda stop the engine when the car is stopped. It starts automatically when you engage gear to move off. Otherwise the petrol engine is always running. Toyota cars will drive short distances without the petrol engine, relying entirely on the electric drive. All manufacturers go to some lengths to keep weight down by using aluminium components and careful design. Aerodynamic efficiency is also considered very important. The extra complexity of the hybrid technology means that these cars are more expensive than conventional cars. Costs will come down if production volumes go up.

The Government is encouraging the use of hybrids by reducing the cost of the Road Fund Licence for cars with low emissions and Congestion Charges in London are waived for hybrids. People getting a company car pay much less tax for their "benefit in kind" than conventional car users. Thus the high initial cost is offset to some extent by low fuel usage and other savings. At one time buying a hybrid could qualify for a Government grant of £1000.

My own Honda Insight is no longer sold in the UK but my Tax Disc costs nothing at all and I have experienced 66.9 mpg over the 50,000 miles it has been driven. I cruise comfortably at 70mph on motorways and the test figures given in the brochure claimed a top speed of 114 mph and acceleration from 0 to 62 mph in 11.4 seconds. Emissions are 80g/km. Just like conventional cars the consumption depends on how the car is driven. Short journeys use most fuel because of the initial rich start and journeys on roads restricted to 60 mph turn in the best figures. Going to Tesco is down at about 50mpg whilst a trip to Crewe could be around 80mpg. Motorway journeys regularly return over 70mpg for me.

Honda now sell the Civic Hybrid and Toyota the Prius; both have been on display at the Bollington Transport Extravaganza alongside my Insight. They are both rated with emissions at about 105g/km.

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